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SCIENCE.

FRIDAY, NOVEMBER 13, 1885.

COMMENT AND CRITICISM.

THE NATIONAL ACADEMY OF SCIENCES is holding its autumn session at Albany as we go to press. The number of papers read at these autumn gatherings, which are held now in this city, now in that, is never so great as at the spring meetings held in Washington; but the quality if not the quantity of papers is apt to be equally good, since the session is called, except for specific reasons, for this purpose only. The session at Albany would seem to be no exception to the ordinary rule, and, although there is but a single member of the academy resident in the city,—the veteran geologist, Prof. James Hall,—the attendance has not been insignificant, nor the meeting lacking in good points. Besides the usual papers of only technical importance, there have been a number of very general interest, prominent among which are those of Prof. E. C. Pickering, opening what may fairly be looked on as a new and promising field in astronomy, that of stellar photography; the paper of Prof. S. P. Langley on obscure heat, a continuation of his remarkable researches with the bolometer; that of Dr. Graham Bell, recounting the first fruits of his investigation into the influence of heredity in deafness; and that of Prof. Simon Newcomb, discussing the vexed question at what hour the astronomical day shall begin. In our next issue we hope to present an account of the entire meeting.

THE REPLY of Director Powell, which we publish in another column, to the newspaper attacks on the geological survey, will strike the fair-minded reader by its conclusiveness. It is true that the prosecution, if there were any, would still have the right to prove its allegations by rebutting evidence; but the very fact that the reply of the defence is couched in such terms as to make it easy to do this, renders it doubtful whether any such evidence will be forthcoming. The director does not enter into any long explanations, requiring an exhaustive inquiry into their validity, but in all the important cases interposes a direct denial that the allegations have any foundation. The

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issue is thus brought down to one of easily ascertained facts, which it would be impossible for the director to pervert without speedy exposure. For example, it was distinctly charged that he had paid salaries as high as \$4,000 per year to state geologists. He replies that the name of every geologist employed by the survey is a matter of published record, and challenges the accuser to show that any one of them is a state geologist. For more reasons than appear on the surface, our government science is to be congratulated on the completeness of the defence.

The case has some peculiarities, which render it noteworthy that the director should have been able to vindicate himself so completely, in the face of such an attack. Rarely has a government officer been intrusted with so large an annual expenditure, so completely at his own discretion, as the officer in question. The organization, under which the work was to be done, was largely his own creation, and the funds had to be expended in distant parts of the country, through agencies not in personal contact with the supreme power. Just as the system has been got well into operation, searching investigation is commenced. The disaster which overtakes a sister institution, when exposed to such scrutiny, leads to the confident expectation that this one may also be found wanting in some point, when searched by eagle eyes. That some errors in detail would be found, might almost be taken as a matter of course, and in such a case the extraordinary character of the circumstances might have been plead as a valid excuse for many such errors. And yet the latest report is that the vigilant first auditor has found no fault in the legality of any of the expenditures of the bureau, and finds all the accounts in good shape.

THE CASES OF POISONING at Momence, Ill., recorded at length in a report just issued by the board of health of that state, are of great interest as bringing to light a source of danger hitherto but little regarded. In the course of the investigation it was found that the thirty-seven individuals affected had all eaten of dried beef purchased from the same butcher; of the number seized with the symptoms of poisoning, but one died. Although

trichinae, or some other form of parasite, was at first suspected, the microscope gave no clew to the cause of the sickness. Chemical search for the ordinary mineral and vegetable poisons was also fruitless, but further examination left no doubt in the mind of the investigators that ptomaines were responsible for the trouble. Ptomaines derive their name from *ptoma* ('a corpse'), and were so called because first discovered in a corpse. Selmi, in 1870, while examining the body of a man who was supposed to have been poisoned, found an alkaloid totally unlike any which had been described. Gautier and others, working on the same problem, have demonstrated that, during putrefaction, certain substances are formed, variously described as 'ptomaines' and 'cadaveric alkaloids,' which are peculiar in themselves, and which have poisonous properties. It is probable that the dried beef purchased in Momence had previously begun to putrefy, and these poisonous substances were formed. The fact that several of those affected noticed a bitter taste to the meat would confirm this opinion. It is a fact which has not received the attention it deserves, that in many of the reputed cases of poisoning from dietary articles, disagreeable, peculiar, or bitter tastes are often noticed by the patients, and that those who are wise enough to take the hint which nature thus gives them, and at once refuse to partake further of the article in question, usually escape; while the others, who neglect this warning, suffer. This has been noticed in poisoning by canned tomatoes and apples, as well as by meat.

THE RECENT STUDIES upon the movements of anadromous fishes in our Atlantic rivers and estuaries, the results of which are in part announced in another column, are of considerable moment from several points of view. Much has already been written in a theoretical way concerning the influence of temperature upon the migrations of fishes, upon their times of spawning, the period of hatching, and their rates of growth. The literature of the subject has not, however, been entirely satisfactory, since a definite correlation of observed fact with explanatory hypothesis has rarely been attempted. The same may be said of the literature of fish-culture, which has been to a considerable extent prophetic in character. One of the most important of recent conclusions is that fishes do not of necessity always return to

spawn upon the grounds where they themselves first left the egg, but that slight variations of temperature are sufficient to divert a school of fishes from any river-basin into another. An important practical conclusion is at once suggested; namely, that the success of fish-culture in any hydrographic basin is so dependent upon similar operations in adjoining waters, that co-operative action of the states is absolutely necessary, either through the agency of the general government or by combinations between the state commissions. It is gratifying to know that the mass of water-temperature records which has for fifteen years been accumulating through the labors of the United States fish commission, the signal service, and the lighthouse board, has at last become sufficiently great to afford data for the comparative study of periodical averages. All students of marine zoölogy will profit by the study of these temperature tables, which, we are informed, are soon to be published. The rapid advances which are now being made toward the elucidation of the life histories of American fishes lead us to hope that the time is not very remote when our knowledge of the phenomena of marine life shall be made more definite in character than at present.

THE ATTEMPT TO ESTABLISH a zoölogical garden in America after the plan of those already in existence in Europe was a novel and interesting one at the time that the Philadelphia zoölogical society was organized. The garden was opened under the most favorable circumstances. The popular sentiment was successfully appealed to, and during the centennial year the garden received a fair share of the public patronage. But the favor which attended the beginning of the enterprise has not continued. The society has been conducted at a loss for several years. The anticipated deficit for the current year is seven thousand dollars, an amount so large as to induce the directors to invite the citizens of Philadelphia to meet to hear a statement of the society's affairs, and to discuss measures for their relief. At a representative meeting of the citizens, held November 5, it was quickly discerned that the garden of the society had a firm hold on the affections of the people. There appears to be no doubt that a successful effort will be made to meet the year's deficit, and to devise means by which the society can be placed upon a permanent basis. The management of zoölogical gardens in America will be found to be

a different problem from that of their European progenitors. An interest in zoölogy is with us less diffused than is the case abroad, the climate is less favorable for out-of-door recreation, the gardens are at great distances from the centres of population, and the cost of securing many of the larger and more interesting animals is great in proportion as the gardens are removed from the chief places of traffic. The zoölogical garden in this country is not likely ever to be self-supporting. Whether or no the zoölogical garden should have a plan of organization distinct from that of the botanical garden is a mooted point. It would appear that there is nothing inconsistent with the idea that the plan of the learned society or the university might readily embrace that of the management of a collection of living animals. Were such an arrangement practicable, it would enable the garden to be benefited by the use of the general endowment of such bodies, while it would not interfere with the popular uses of the collection.

NOTWITHSTANDING THE FACT that the whole civilized world is interested in the subject of the transfer of ships across the narrow neck of land which separates the Atlantic and Pacific Oceans, by which the long voyage around Cape Horn would be avoided, yet there has been no project proposed or suggested which has met with less favor in the minds of engineers of high standing, at least in this country, than the Panama Canal. The magnitude of the enterprise, the formidable engineering difficulties to be encountered, the unhealthiness of the climate, and the fact that the undertaking is a private one, depending on private subscriptions, constitute obstacles which, when taken together, seem to render success almost hopeless. The recent call for more money to carry on the work, when the most costly and difficult portions have hardly been begun, and after vast sums have already been expended, must awaken grave apprehensions on the part of those who have already invested their money in the enterprise, that the project is beyond the financial abilities of the most powerful syndicates.

AS THE INCOME of the Elizabeth Thompson science fund is already available, the trustees desire to receive applications for appropriations in aid of scientific work. This endowment is not for the benefit of any one department of science, but it is the intention of the trustees to give the pref-

erence to those investigations, not already otherwise provided for, which have for their object the advancement of human knowledge, or the benefit of mankind in general, rather than to researches directed to the solution of questions of merely local importance. Applications for assistance from this fund should be forwarded to the secretary of the board of trustees, Dr. C. S. Minot, 25 Mount Vernon Street, Boston, Mass., and should be accompanied by a full statement of the nature of the investigation, of the conditions under which it is to be prosecuted, and of the manner in which the appropriation asked for is to be expended. The first grant will probably be made early in January, 1886. The fund was originally given by Mrs. Thompson, as will be remembered, with the expectation that it would be administered by the officers of the International scientific association proposed at the Philadelphia meeting of the American association. This proposition was to have been brought up at the Aberdeen meeting of the British association; but, so far as known, no action was taken. The fund is now in the charge of the able body of trustees already named, (*Science*, vi. 144), and will doubtless prove a great aid to American science if the best investigators will ask for appropriations from the income. It is a severe comment upon the physicists of the United States that the income of the similar fund established by Rumford for investigations in light and heat should go begging as it does.

THE AGASSIZ MUSEUM AT CAMBRIDGE.

THE day after his twenty-third birthday, Agassiz wrote from Munich to his brother, "The thing I most desire seems to me, at least for the present, farthest from my reach; namely, the direction of a great museum." He lived to see the Museum of comparative zoölogy, which he founded on another continent, the largest collection, covering the whole field of natural history, ever brought together by the endeavors of a single individual. Reckoning from the inauguration of the first section of the building, to-day completes its quarter centennial, and renders appropriate a succinct account of its inception and growth, largely in the words of his son, Dr. Alexander Agassiz, when addressing, last spring, the friends of the institution at the opening of the latest extension of the building.

The recently published 'Life of Agassiz' shows us that his passion for acquisition was enormous from his youth. Wherever he went, his collections in natural history accumulated to a burdensome degree; and, although he left every thing behind him